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FOREST STATISTICS FOR PENDLETON, POCAHONTAS,
AND RANDOLPH COUNTIES, WEST VIRGINIA

*Northeastern
Forest Experiment Station
Upper Darby, Pa.
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This is the second in a series of Forest Survey statistical releases published by the Northeastern Forest Experiment Station. The prior release in the series is:

No. 1 - Forest Resources of Elk, Forest, McKean, and Warren Counties, Pennsylvania

FOREWORD

This release presents statistics on forest area and timber volumes for Pendleton, Pocahontas, and Randolph Counties, West Virginia. Six statistical tables on forest area and sixteen on timber volumes are included. These tables are followed by a brief description of Forest Survey procedure and estimates of the accuracy of forest area and timber volume figures. Because many of the terms used in this release have special meanings, an explanation of the terms used may be found at the end of the report.

This report was prepared by the Forest Survey organization at the Northeastern Forest Experiment Station under the direction of Frank A. Ineson, assisted by Harry W. Camp, Jr., in charge of inventory; Roland H. Ferguson, in charge of compilations; and Carl J. Holcomb, field supervisor. Field inventory work in these counties began in September 1946 and was completed in May 1947. Final volume tables were prepared from available tree measurements in May 1948, and a survey of public forest land ownership was completed in September 1948. Field work was conducted by Thomas G. Clark, George E. Doverspike, John H. Noyes, Irvin C. Reigner, and Alvin K. Wilson. Aerial photographs used in this survey were provided by the West Virginia Conservation Commission and the Monongahela National Forest.

Similar reports will be issued for other counties or county groups within each State as the field work progresses and the statistics are compiled. After an entire State is covered in this manner, a statistical report for the State as a whole will be issued, presenting the findings of the Forest Survey on forest area, timber volume, growth, and commodity drain. Later, a comprehensive report analyzing the current and prospective forest situation for the State will be published.

The Forest Survey is conducted in the various forest regions by the forest experiment stations of the Forest Service. The project in the Northeast is directed by the Northeastern Forest Experiment Station with central headquarters in Upper Darby, Pennsylvania.

Kemp
Henry
Hatch
Brown
Smith
St. John
Metcalf
Peffer
Wickham
Pissot
Hutton

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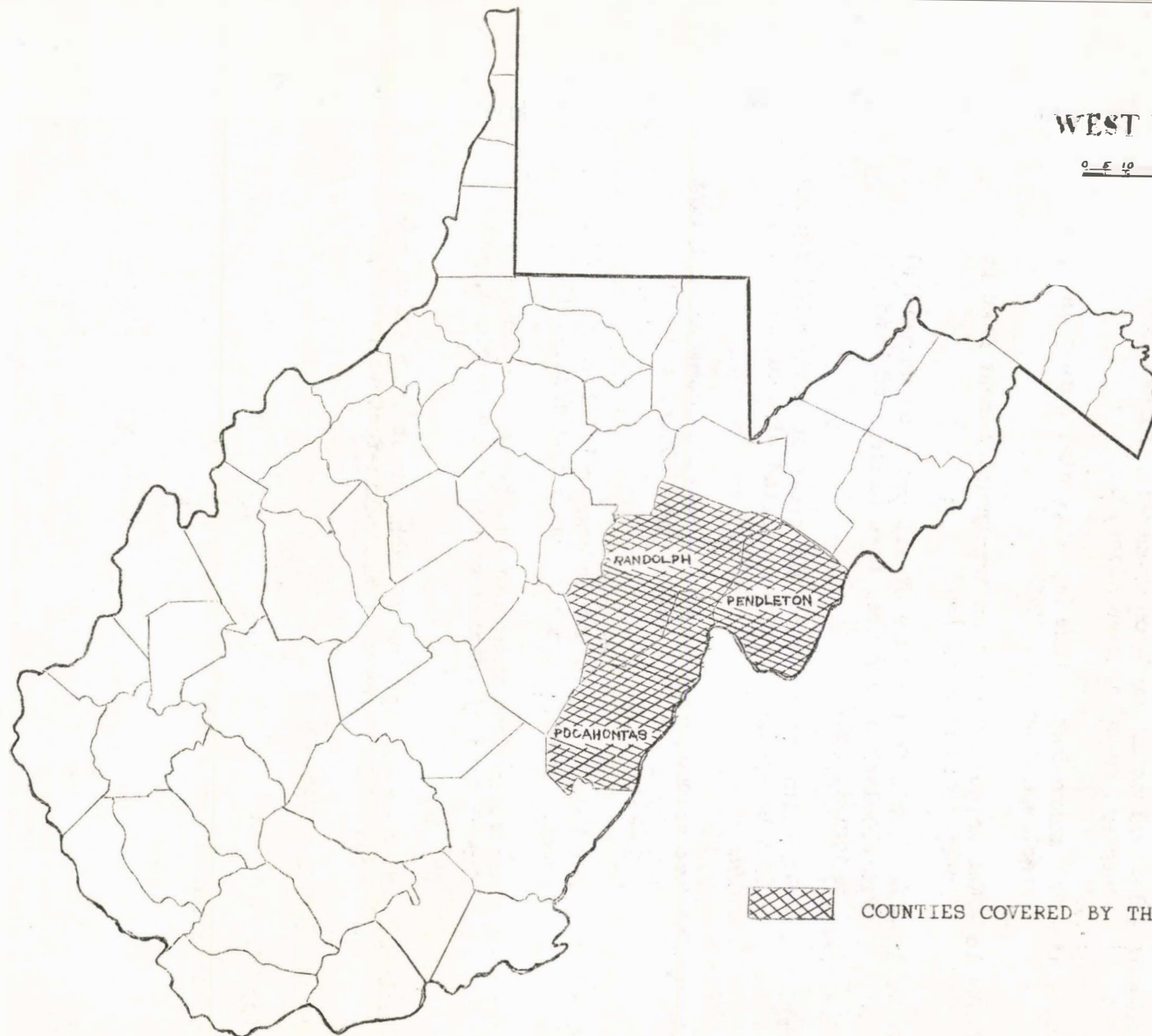
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WEST VIRGINIA

0 10 20 30 40 MILES



COUNTIES COVERED BY THIS REPORT

FOREST STATISTICS FOR PENDLETON,
POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

compiled by

Forest Survey Staff
Northeastern Forest Experiment Station

SALIENT STATISTICS

Pendleton, Pocahontas, and Randolph Counties lie in the east-central section of West Virginia. About half of Pendleton and Pocahontas Counties lie in the Allegheny ridge and valley country, while the western portion of Pocahontas and all of Randolph County lie in the Allegheny Plateau. The highest mountains of the State run in a northeasterly and southwesterly direction through the central part of the area. Elevations range from 1,155 feet to 4,860 feet above sea level. The average annual precipitation varies from 40 to 60 inches. Pendleton County drains north-eastward into the Potomac River. Randolph County is in the Monongahela River drainage, which is tributary to the Ohio. Most of Pocahontas County drains southwesterly into the Kanawha River, thence to the Ohio.

The population of the three counties in 1940 was 55,049 or 2.9 percent of the State's total. It was almost equally divided between farm and nonfarm residents. Pocahontas and Pendleton Counties have a predominantly farm population. In Randolph County the farm population is only about one-third of the total. The principal city of the region is Elkins, located in Randolph County.

Farming is the main occupation; it is followed in importance by lumbering and mining. Lumbering has been an important industry since 1880. There are more than 100 sawmills in the area. In addition to sawmills, there are a large dimension plant, a handle factory, a veneer mill, two flooring mills, a bowling pin mill, a stave mill, and two tanneries. The production of mine timbers is also important in Pocahontas and Randolph Counties. There are no main-line railroads in the area, but a feeder line operates in Pocahontas and Randolph Counties. Pendleton County has no railroad at all. Most sections have a good road network and are accessible by truck and auto travel.

The three counties have a gross land area of 1,711,400 acres. When first settled in the early 1700's they were almost completely forested. Lumbering, farming, and clearing have reduced the forest area to 1,345,000 acres or 78.6 percent of the total land area. About 6,100 acres of forest

land is rated as nonproductive, incapable of producing commercial stands. An additional 13,700 acres of productive forest land has been withdrawn from commercial use. The Watoga State Park, covering 10,052 acres, makes up most of this total. The remainder is located in various State and National forest recreational areas scattered throughout the three counties. The remaining forest area, 1,325,200 acres, is classed as commercial forest land.

Forest land ownership.---About 42 percent of the commercial forest area, or 560,700 acres, is in public ownership. Of this amount, 494,500 acres are part of the Monongahela National Forest and 45,700 acres are part of the George Washington National Forest. The State, counties, and municipalities own 20,500 acres of commercial forest land. Over half of the commercial forest area is in private ownership, 348,800 acres of which is in farm woodlands and 415,700 acres in industrial and other private ownership.

Forest type groups.---The forest types of these counties have been combined into five principal forest type groups. The northern hardwood types, comprising 44 percent of the commercial forest area, are the most important. They are usually found in the higher elevations of the Allegheny Plateau and on the Allegheny ridges. Beech, yellow birch, and sugar maple are the characteristic species. The principal associates are red maple, buckeye, basswood, and red oak.

The oak-hickory types, covering 33 percent of the commercial forest area, are generally found along the slopes and lower elevations. Red oak is the principal species but is generally found in mixture with chestnut oak, white oak, sugar maple, and hickory. Sugar maple and other northern hardwood species occur in association with the oak largely to the west of the mountains. Chestnut formerly grew on much of the area now covered by these types.

The chestnut oak type comprises about 11 percent of the commercial forest area. It is often found in nearly pure stands along the ridges of the foothills to the east of the Allegheny Plateau. Red oak is the most frequent associate. The pine-oak types cover about 5 percent of the area. These stands, composed of pines and oaks in mixture, are found principally in Pendleton and Pocahontas Counties. The principal species are chestnut oak and red oak, and white, pitch, and Virginia pines.

The spruce-hardwood types cover about 7 percent of the commercial forest area. Pure stands of red spruce and mixed stands of red spruce and yellow birch, occasionally with beech, are found. These types occur generally at the higher elevations (above 3,200 feet) of the Allegheny Plateau. Spruce was formerly more important in this area. Northern hardwoods have taken over many areas from which virgin spruce stands were removed.

Site quality, based on productive capacity, indicates that about 80 percent of the commercial forest area is capable of growing hardwood

saw-timber trees containing one and one-half to three 16-foot logs each, or softwood saw-timber trees containing three to five 16-foot logs. Only 2½ percent of the commercial forest area is rated better than this; the remainder is rated poorer but still capable of producing trees with at least one 8-foot log. Nonproductive sites are included in the noncommercial forest area.

Stand-size classes.--The major part of the commercial forest area is in second-growth saw-timber stands containing 1,500 board feet or more per acre. About 27 percent is in medium and heavy stands with 5,000 board feet or more per acre, and 35 percent is in light saw-timber stands. These stands range from as small as one acre up to several hundred acres. The volume in many saw-timber stands is too little or the stands too scattered to be operable at present.

Pole-timber stands having a net volume of less than 1,500 board feet per acre, but that are at least 10 percent stocked with pole-timber or larger trees, make up 28 percent of the forest area. Only 5 percent is in well-stocked seedling and sapling stands, and 4 percent in poorly stocked stands and unstocked areas.

The medium and heavy saw-timber stands average 8,060 board feet per acre and the light saw-timber stands 2,940 board feet per acre. They also have about 13 cords and 10 cords per acre of smaller material respectively. The pole-timber stands contain an average of 610 board feet of saw-timber and an additional 8 cords per acre of smaller material.

Sawlog volume.--In the three counties, there is a total of 4,489,500 M board feet of sawlog material in softwood saw-timber trees 9.0 inches and larger in diameter, breast height, and in hardwood saw-timber trees 11.0 inches and larger. About 64 percent of this volume is located in medium and heavy saw-timber stands, and 31 percent is in light saw-timber stands. Only about 5 percent is found in pole timber and other stands. Much of the sawlog material is not economically available at present. It is located in small, widely separated stands with low volumes or in scattered low-quality trees left from earlier logging operations.

Hardwoods account for 86 percent of the sawlog volume, the principal species being red oak, chestnut oak, beech, sugar maple, and yellow birch in that order. The most prominent softwood species is red spruce, followed by white pine and hemlock. Nearly 39 percent of the hardwood volume is in trees 19.0 inches and larger, but only 12 percent of the softwood volume is in trees this large.

An additional 462,600 M board feet of dead chestnut was found in these counties.

All sawlog volumes are net; that is, deductions have been made for rot, crook, and other defects. The average cull for all softwood saw-timber trees is about 2 percent; for hardwood trees, 11 percent. No board-foot volume estimates are included for cull trees.

Volume in cords.--The total net volume in all live trees 5.0 inches and larger on commercial forest land is 22,536,000 cords. Hardwoods make up 91 percent of this total and softwoods only 9 percent. Less than 4 percent of the total volume is in so-called nonmerchantable species such as pin cherry, sassafras, serviceberry, sourwood, and hophornbeam. Of the total volume, 45 percent is in sawlog material, 17 percent is found in the upper stems and limbs of saw-timber trees, 28 percent in pole-timber trees, and 10 percent in the sound volume of cull trees. In addition to the live tree volume, about 1,491,000 cords of dead chestnut was found.

Cubic-foot volume.--There is a solid wood content of 1,492,400 M cubic feet in all live trees 5.0 inches d.b.h. and larger. About 23 percent of the cubic-foot volume of softwoods is in trees ranging from 5.0 to 8.9 inches d.b.h., 60 percent in trees from 9.0 to 16.9 inches, and about 17 percent in trees over 17.0 inches d.b.h. In hardwoods 18 percent of the cubic-foot volume is in trees ranging from 5.0 to 8.9 inches d.b.h., 45 percent in trees from 9.0 to 16.9 inches, and 37 percent in trees 17.0 inches d.b.h. and larger.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 1.--Commercial and noncommercial forest area by county, 1947

Kind of land	Pendleton	Pocahontas	Randolph	Total	
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Percent</u>
Forest:					
Commercial	332,700	464,200	528,300	1,325,200	77.4
Noncommercial:					
Reserved productive	600	11,300	1,800	13,700	0.8
Nonproductive	--	5,700	400	6,100	.4
Total	600	17,000	2,200	19,800	1.2
Total forest	333,300	481,200	530,500	1,345,000	78.6
Nonforest	111,500	122,300	132,600	366,400	21.4
All land ^{1/}	444,800	603,500	663,100	1,711,400	100.0

^{1/} From Areas of the United States, 1940, Bureau of the Census.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 2.--Commercial forest area by ownership class and county, 1947

Ownership class	Pendleton	Pocahontas	Randolph	Total	
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Percent</u>
National forest:					
George Washington	45,700	--	--	45,700	3.4
Monongahela	59,200	270,900	164,400	494,500	37.4
Total National forest	104,900	270,900	164,400	540,200	40.8
Other Federal	--	--	--	--	--
Total Federal	104,900	270,900	164,400	540,200	40.8
State, county, and municipal	--	11,000	9,500	20,500	1.5
Private:					
Farm woodland ^{1/}	142,600	87,300	118,900	348,800	26.3
Other	85,200	95,000	235,500	415,700	31.4
Total private	227,800	182,300	354,400	764,500	57.7
All ownerships	332,700	464,200	528,300	1,325,200	100.0

^{1/} Census of Agriculture: 1945.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 3.--Commercial forest area by forest type and county, 1947

Forest type	Pendleton	Pocahontas	Randolph	Total	
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Percent</u>
Pine-oak	43,500	13,700	3,700	60,900	4.6
Spruce-hardwood:					
Spruce	9,700	30,500	3,700	43,900	3.3
Spruce-hardwood	3,500	10,000	31,100	44,600	3.4
Total	13,200	40,500	34,800	88,500	6.7
Northern hardwood:					
Aspen	--	--	25,100	25,100	1.9
Northern hardwood	52,300	192,700	270,400	515,400	38.9
Hardwood-spruce	5,900	23,300	17,700	46,900	3.5
Total	58,200	216,000	313,200	587,400	44.3
Chestnut oak	81,800	44,900	17,800	144,500	10.9
Oak-hickory:					
Hardwood-white pine	18,800	9,400	--	28,200	2.1
Oak	117,200	139,700	158,800	415,700	31.4
Total	136,000	149,100	158,800	443,900	33.5
All types	332,700	464,200	528,300	1,325,200	100.0

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 4.--Commercial forest area by county, forest type group,
and stand-size class, 1947

PENDLETON COUNTY

Stand-size class	Forest type group					All forest types
	Pine-oak	Spruce-hardwood	Northern hardwood	Chestnut oak	Oak-hickory	
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Saw-timber stands:						
Medium and heavy	11,700	5,500	35,200	23,000	51,500	126,900
Light	5,400	--	4,000	43,100	43,000	95,500
Pole-timber stands	18,300	--	10,500	15,700	29,600	74,100
Seedling and sapling	3,800	--	--	--	7,600	11,400
Poorly stocked stands	4,300	7,700	8,500	--	4,300	24,800
All stands	43,500	13,200	58,200	81,800	136,000	332,700

POCAHONTAS COUNTY

Saw-timber stands:						
Medium and heavy	--	24,800	71,300	4,800	29,100	130,000
Light	9,200	7,600	83,800	32,000	71,600	204,200
Pole-timber stands	4,500	4,600	44,500	4,500	42,000	100,100
Seedling and sapling	--	--	12,900	3,600	6,400	22,900
Poorly stocked stands	--	3,500	3,500	--	--	7,000
All stands	13,700	40,500	216,000	44,900	149,100	464,200

RANDOLPH COUNTY

Saw-timber stands:						
Medium and heavy	--	11,500	67,500	--	23,100	102,100
Light	3,700	14,800	84,400	11,700	53,600	168,200
Pole-timber stands	--	3,100	128,300	6,100	60,300	197,800
Seedling and sapling	--	5,400	16,400	--	13,500	35,300
Poorly stocked stands	--	--	16,600	--	8,300	24,900
All stands	3,700	34,800	313,200	17,800	158,800	528,300

THREE-COUNTY TOTAL

Saw-timber stands:						
Medium and heavy	11,700	41,800	174,000	27,800	103,700	359,000
Light	18,300	22,400	172,200	86,800	168,200	467,900
Pole-timber stands	22,800	7,700	183,300	26,300	131,900	372,000
Seedling and sapling	3,800	5,400	29,300	3,600	27,500	69,600
Poorly stocked stands	4,300	11,200	28,600	--	12,600	56,700
All stands	60,900	88,500	587,400	144,500	443,900	1,325,200

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 5.--Commercial forest area by forest type group
and site class, 1947

Forest type group	Site class			All sites
	Good	Fair	Poor	
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Pine-oak	---	36,100	24,800	60,900
Spruce-hardwood	---	75,300	13,200	88,500
Northern hardwood	28,700	518,000	40,700	587,400
Chestnut-oak	---	61,900	82,600	144,500
Oak-hickory	3,900	374,800	65,200	443,900
All types	32,600	1,066,100	226,500	1,325,200
Percent	2.5	80.4	17.1	100.0

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 6.--Commercial forest area by watersheds and
stand-size class, 1947

Stand-size class	Watershed			Total	
	Kanawha	Monongahela	Potomac		
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Percent</u>
Saw-timber stands:					
Medium and heavy	127,200	104,900	126,900	359,000	27.1
Light	216,800	155,600	95,500	467,900	35.3
Pole-timber stands	104,000	193,900	74,100	372,000	28.1
Seedling and sapling	22,900	35,300	11,400	69,600	5.2
Poorly stocked stands	6,900	25,000	24,800	56,700	4.3
All stands	477,800	514,700	332,700	1,325,200	100.0
Percent	36.1	38.8	25.1	100.0	

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 7.--Net board-foot volume on commercial forest land by forest type group,
stand-size class, and species group, 1947

(Log scale, International 1/4-inch rule)

Stand-size class and species group	Forest type group					All forest types
	Pine- oak	Spruce- hardwood	Northern hardwood	Chestnut oak	Oak- hickory	
	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.
Saw-timber stands:						
Medium and heavy						
Softwood	34,200	219,900	103,400	11,200	61,200	429,900
Hardwood	42,100	70,500	1,362,600	196,600	790,900	2,462,700
Total	76,300	290,400	1,466,000	207,800	852,100	2,892,600
Light						
Softwood	29,300	37,800	51,300	5,500	22,500	146,400
Hardwood	13,500	18,200	494,800	218,600	484,400	1,229,500
Total	42,800	56,000	546,100	224,100	506,900	1,375,900
Pole-timber stands						
Softwood	10,600	12,700	7,300	5,200	6,500	42,300
Hardwood	3,600	--	84,200	17,400	66,100	171,300
Total	14,200	12,700	91,500	22,600	72,600	213,600
Other stands ^{1/}						
Softwood	--	--	--	--	--	--
Hardwood	900	--	2,700	--	3,800	7,400
Total	900	--	2,700	--	3,800	7,400
All stands						
Softwood	74,100	270,400	162,000	21,900	90,200	618,600
Hardwood	60,100	88,700	1,944,300	432,600	1,345,200	3,870,900
Total	134,200	359,100	2,106,300	454,500	1,435,400	4,489,500
Percent	3.0	8.0	46.9	10.1	32.0	100.0

^{1/} Includes seedling and sapling stands, poorly stocked stands, and unstocked areas.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 8.--Average net board-foot volume per acre on commercial forest land
by forest type group, stand-size class, and species group, 1947

(Log scale, International 1/4-inch rule)

Stand-size class and species group	Forest type group					All forest types
	Pine- oak	Spruce- hardwood	Northern hardwood	Chestnut oak	Oak- hickory	
	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.
Saw-timber stands:						
Medium and heavy						
Softwood	2,920	5,260	590	400	590	1,200
Hardwood	3,600	1,690	7,830	7,070	7,630	6,860
Total	6,520	6,950	8,420	7,470	8,220	8,060
Light						
Softwood	1,600	1,690	300	60	130	310
Hardwood	740	810	2,870	2,520	2,880	2,630
Total	2,340	2,500	3,170	2,580	3,010	2,940
Pole-timber stands						
Softwood	460	^{1/} 1,650	40	200	50	110
Hardwood	160	--	460	660	500	460
Total	620	^{1/} 1,650	500	860	550	570
Other stands						
Softwood	--	--	--	--	--	--
Hardwood	110	--	50	--	90	60
Total	110	--	50	--	90	60
All stands						
Softwood	1,220	3,060	280	150	220	470
Hardwood	990	1,000	3,310	2,990	3,030	2,920
Total	2,210	4,060	3,590	3,140	3,230	3,390

^{1/} Average volume per acre above maximum for class results from
adjustment between photo interpretation and ground plots for light sample.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 9.--Net volume in cords of sawlog material on commercial forest land
by forest type group, stand-size class, and species group, 1947

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	Pine- oak	Spruce- hardwood	Northern hardwood	Chestnut oak	Oak- hickory	
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>
Saw-timber stands:						
Medium and heavy						
Softwood	70	472	209	23	122	896
Hardwood	95	156	3,115	448	1,793	5,607
Total	165	628	3,324	471	1,915	6,503
Light						
Softwood	61	85	107	11	46	310
Hardwood	31	42	1,141	504	1,104	2,822
Total	92	127	1,248	515	1,150	3,132
Pole-timber stands						
Softwood	23	30	15	11	13	92
Hardwood	9	--	197	40	158	404
Total	32	30	212	51	171	496
Other stands						
Softwood	--	--	--	--	--	--
Hardwood	2	--	7	--	9	18
Total	2	--	7	--	9	18
All stands						
Softwood	154	587	331	45	181	1,298
Hardwood	137	198	4,460	992	3,064	8,851
Total	291	785	4,791	1,037	3,245	10,149
Percent	2.9	7.7	47.2	10.2	32.0	100.0

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 10.--Average number of cords per acre of sawlog material on
commercial forest land by forest type group, stand-size
class, and species group, 1947

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	Pine- oak	Spruce- hardwood	Northern hardwood	Chestnut oak	Oak- hickory	
	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>
Saw-timber stands:						
Medium and heavy						
Softwood	6.0	11.3	1.2	0.8	1.2	2.5
Hardwood	8.1	3.7	17.9	16.1	17.3	15.6
Total	14.1	15.0	19.1	16.9	18.5	18.1
Light						
Softwood	3.3	3.8	0.6	0.1	0.3	0.7
Hardwood	1.7	1.9	6.6	5.8	6.6	6.0
Total	5.0	5.7	7.2	5.9	6.9	6.7
Pole-timber stands						
Softwood	1.0	3.9	0.1	0.4	0.1	0.2
Hardwood	.4	--	1.1	1.5	1.2	1.1
Total	1.4	3.9	1.2	1.9	1.3	1.3
Other stands						
Softwood	--	--	--	--	--	--
Hardwood	0.2	--	0.1	--	0.2	0.1
Total	0.2	--	0.1	--	0.2	0.1
All stands						
Softwood	2.5	6.6	0.6	0.3	0.4	1.0
Hardwood	2.2	2.2	7.6	6.9	6.9	6.7
Total	4.7	8.8	8.2	7.2	7.3	7.7

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 11.--Net volume in cords of material other than sawlog on commercial forest land by forest type group, stand-size class, and species group, 1947

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	Pine- oak	Spruce- hardwood	Northern hardwood	Chestnut oak	Oak- hickory	
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>
Saw-timber stands:						
Medium and heavy						
Softwood	12	205	68	6	27	318
Hardwood	88	154	2,284	377	1,289	4,192
Total	100	359	2,352	383	1,316	4,510
Light						
Softwood	54	89	68	15	23	249
Hardwood	91	95	2,078	672	1,428	4,364
Total	145	184	2,146	687	1,451	4,613
Pole-timber stands						
Softwood	39	88	25	3	81	236
Hardwood	89	12	1,500	200	976	2,777
Total	128	100	1,525	203	1,057	3,013
Other stands						
Softwood	3	11	9	-	5	28
Hardwood	7	12	86	6	112	223
Total	10	23	95	6	117	251
All stands						
Softwood	108	393	170	24	136	831
Hardwood	275	273	5,948	1,255	3,805	11,556
Total	383	666	6,118	1,279	3,941	12,387
Percent	3.1	5.4	49.4	10.3	31.8	100.0

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 12.--Average number of cords per acre of material other than sawlog
on commercial forest land by forest type group, stand-size
class, and species group, 1947

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	Pine- oak	Spruce- hardwood	Northern hardwood	Chestnut oak	Oak- hickory	
	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>	<u>Cords</u>
Saw-timber stands:						
Medium and heavy						
Softwood	1.0	4.9	0.4	0.2	0.3	0.9
Hardwood	7.5	3.7	13.1	13.6	12.4	11.7
Total	8.5	8.6	13.5	13.8	12.7	12.6
Light						
Softwood	2.9	4.0	0.4	0.2	0.1	0.5
Hardwood	5.0	4.2	12.1	7.7	8.5	9.3
Total	7.9	8.2	12.5	7.9	8.6	9.8
Pole-timber stands						
Softwood	1.7	11.4	0.1	0.1	0.6	0.6
Hardwood	3.9	1.6	8.2	7.6	7.4	7.5
Total	5.6	13.0	8.3	7.7	8.0	8.1
Other stands						
Softwood	0.4	0.7	0.1	--	0.1	0.2
Hardwood	.8	.7	1.5	1.7	2.8	1.8
Total	1.2	1.4	1.6	1.7	2.9	2.0
All stands						
Softwood	1.8	4.4	0.3	0.2	0.3	0.6
Hardwood	4.5	3.1	10.1	8.7	8.6	8.7
Total	6.3	7.5	10.4	8.9	8.9	9.3

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 13.--Net board-foot volume on commercial forest land by species
and stand-size class, 1947

(Log scale, International 1/4-inch rule)

Species	Saw- timber stands	Pole- timber stands	Other stands	Total	
	<u>M bd.ft.</u>	<u>M bd.ft.</u>	<u>M bd.ft.</u>	<u>M bd.ft.</u>	<u>Percent</u>
Softwoods:					
Spruce	308,000	14,400	--	322,400	7.2
Hemlock	104,700	9,500	--	114,200	2.5
White pine	112,800	2,700	--	115,500	2.6
Other softwoods	50,800	15,700	--	66,500	1.5
All softwoods	576,300	42,300	--	618,600	13.8
Hardwoods:					
Sugar maple	395,400	6,000	1,400	402,800	9.0
Red maple	240,000	3,200	--	243,200	5.4
Red oak	782,600	39,000	--	821,600	18.3
White oak	120,600	5,500	--	126,100	2.8
Chestnut oak	548,500	28,300	900	577,700	12.9
Yellow birch	378,100	7,200	--	385,300	8.6
Beech	435,600	21,200	--	456,800	10.2
Basswood	185,700	1,700	--	187,400	4.2
Black cherry	78,600	7,700	--	86,300	1.9
Yellow-poplar	76,300	10,200	500	87,000	1.9
Cucumber	72,000	800	--	72,800	1.6
Hickory	127,700	11,600	--	139,300	3.1
Gum	36,400	4,000	--	40,400	.9
Black locust	72,100	--	800	72,900	1.6
Other hardwoods	142,600	24,900	3,800	171,300	3.8
All hardwoods	3,692,200	171,300	7,400	3,870,900	86.2
All species ^{2/}	4,268,500	213,600	7,400	4,489,500	100.0
Percent	95.0	4.8	0.2	100.0	

^{1/} Includes 13,100 M bd.ft. of so-called nonmerchantable species such as pin cherry, sassafras, and serviceberry.

^{2/} In addition, there is 462,600 M bd.ft. of dead chestnut: 404,400 M in saw-timber stands, 55,500 M in pole-timber stands, and 2,700 M in poorly-stocked stands.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 14.--Net volume in cords on commercial forest land by species
and stand-size class, 1947

(Standard cords, including bark)

Species	Saw- timber stands	Pole- timber stands	Other stands	Total	
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>Percent</u>
Softwoods:					
Spruce	1,032	136	11	1,179	5.2
Hemlock	296	35	--	331	1.5
White pine	292	79	--	371	1.6
Other softwoods	153	78	17	248	1.1
All softwoods	1,773	328	28	2,129	9.4
Hardwoods:					
Sugar maple	1,872	125	6	2,003	8.9
Red maple	1,212	311	18	1,541	6.8
Red oak	2,971	464	7	3,442	15.3
White oak	608	71	17	696	3.1
Chestnut oak	2,607	562	15	3,184	14.2
Yellow birch	1,802	260	35	2,097	9.3
Beech	2,033	291	--	2,324	10.3
Basswood	835	58	--	893	4.0
Black cherry	417	162	21	600	2.7
Yellow-poplar	307	84	6	397	1.8
Cucumber	371	112	18	501	2.2
Hickory	570	129	6	705	3.1
Gum	130	26	5	161	.7
Black locust	399	119	28	546	2.4
Other hardwoods	851	407	59	<u>1/</u> 1,317	5.8
All hardwoods	16,985	3,181	241	20,407	90.6
All species <u>2/</u>	18,758	3,509	269	22,536	100.0
Percent	83.2	15.6	1.2	100.0	

1/ Includes 768 M cords of so-called nonmerchantable species such as pin cherry, sassafras, serviceberry, sourwood, and hophornbeam.

2/ In addition, there is 1,491 M cords of dead chestnut; 1,296 M in saw-timber stands, 186 M in pole-timber stands, and 9 M in poorly stocked stands.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 15.--Net board-foot volume on commercial forest land by species
and county, 1947

(Log scale, International 1/4-inch rule)

Species	Pendleton	Pocahontas	Randolph	Total
	<u>M bd.ft.</u>	<u>M bd.ft.</u>	<u>M bd.ft.</u>	<u>M bd.ft.</u>
Softwoods:				
Spruce	40,300	198,100	84,000	322,400
Hemlock	58,800	33,100	22,300	114,200
White pine	76,500	39,000	--	115,500
Other softwoods	48,600	17,900	--	66,500
All softwoods	224,200	288,100	106,300	618,600
Hardwoods:				
Sugar maple	91,800	220,300	90,700	402,800
Red maple	30,500	134,800	77,900	243,200
Red oak	335,200	199,600	286,800	821,600
White oak	38,500	77,700	9,900	126,100
Chestnut oak	363,700	131,600	82,400	577,700
Yellow birch	25,500	176,900	182,900	385,300
Beech	--	166,300	290,500	456,800
Basswood	45,200	62,600	79,600	187,400
Black cherry	2,100	8,400	75,800	86,300
Yellow-poplar	--	7,600	79,400	87,000
Cucumber	800	61,500	10,500	72,800
Hickory	29,100	48,800	61,400	139,300
Gum	9,200	11,300	19,900	40,400
Black locust	23,800	45,100	4,000	72,900
Other hardwoods	18,200	73,500	79,600	171,300
All hardwoods	1,013,600	1,426,000	1,431,300	3,870,900
All species ^{1/}	1,237,800	1,714,100	1,537,600	4,489,500
Percent	27.6	38.2	34.2	100.0

^{1/} In addition, there is 79,300 M board feet of dead chestnut in Pendleton County, 224,900 M board feet in Pocahontas County, and 158,400 M board feet in Randolph County.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 16.--Net volume in cords on commercial forest land by species
and county, 1947

(Standard cords, including bark)

Species	Pendleton	Pocahontas	Randolph	Total
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>
Softwoods:				
Spruce	121	730	328	1,179
Hemlock	154	101	76	331
White pine	281	90	--	371
Other softwoods	185	63	--	248
All softwoods	741	984	404	2,129
Hardwoods:				
Sugar maple	485	1,030	488	2,003
Red maple	164	688	689	1,541
Red oak	1,326	926	1,190	3,442
White oak	206	327	163	696
Chestnut oak	1,890	687	607	3,184
Yellow birch	148	898	1,051	2,097
Beech	25	973	1,326	2,324
Basswood	255	270	368	893
Black cherry	33	111	456	600
Yellow-poplar	1	38	358	397
Cucumber	25	271	205	501
Hickory	180	220	305	705
Gum	39	41	81	161
Black locust	133	226	187	546
Other hardwoods	138	447	732	1,317
All hardwoods	5,048	7,153	8,206	20,407
All species ^{1/}	5,789	8,137	8,610	22,536
Percent	25.7	36.1	38.2	100.0

^{1/} In addition, there is 267 M cords of dead chestnut in Pendleton County, 715 M cords in Pocahontas County, and 509 M cords in Randolph County.

715
267
509
1489 000 cords

1489 X = 96,900

X = 65' cut of solid
wood per cord of wood
with bark

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 17.--Net cubic-foot volume of all trees on commercial forest land
by species, tree class, and kind of material, 1947

(Excluding bark)

Species	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	M cu.ft.	M cu.ft.	M cu.ft.	M cu.ft.	M cu.ft.
Softwoods:					
Spruce	54,500	10,600	25,500	1,300	91,900
Hemlock	17,700	2,900	4,700	500	25,800
White pine	18,200	2,100	2,300	6,400	29,000
Other softwoods	10,800	2,300	5,300	900	19,300
All softwoods	101,200	17,900	37,800	9,100	166,000
Hardwoods:					
Sugar maple	59,300	20,500	24,600	25,800	130,200
Red maple	35,400	15,000	42,600	7,100	100,100
Red oak	120,400	48,700	42,000	12,600	223,700
White oak	18,700	9,000	15,500	2,100	45,300
Chestnut oak	86,300	45,400	43,400	31,900	207,000
Yellow birch	55,900	24,000	41,300	15,100	136,300
Beech	69,300	25,300	33,400	23,100	151,100
Basswood	28,700	9,500	12,900	7,000	58,100
Black cherry	13,200	4,800	20,400	500	38,900
Yellow-poplar	13,000	4,800	6,900	1,000	25,700
Cucumber	11,200	4,200	17,200	--	32,600
Hickory	20,800	8,400	15,200	1,400	45,800
Gum	6,100	2,500	1,800	100	10,500
Black locust	11,300	5,000	17,300	1,900	35,500
Other hardwoods	25,700	12,200	38,100	9,600	85,600
All hardwoods	575,300	239,300	372,600	139,200	1,326,400
All species ^{2/}	676,500	257,200	410,400	148,300	1,492,400
Percent	45.4	17.2	27.5	9.9	100.0

^{1/} Includes 49,900 M cubic feet of so-called nonmerchantable species such as pin cherry, sassafras, serviceberry, sourwood, and hophornbeam.

^{2/} In addition, there is 96,900 M cubic feet of dead chestnut, all in saw-timber trees.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 18.--Net volume in cords of all trees on commercial forest land by
species, tree class, and kind of material, 1947

(Standard cords, including bark)

Species	Saw-timber trees		Pole- timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>
Softwoods:					
Spruce	699	136	328	16	1,179
Hemlock	227	37	61	6	331
White pine	233	27	29	82	371
Other softwoods	139	29	68	12	248
All softwoods	1,298	229	486	116	2,129
Hardwoods:					
Sugar maple	913	316	377	397	2,003
Red maple	545	231	656	109	1,541
Red oak	1,853	749	647	193	3,442
White oak	287	138	239	32	696
Chestnut oak	1,326	698	668	492	3,184
Yellow birch	860	370	635	232	2,097
Beech	1,065	390	513	356	2,324
Basswood	441	146	198	108	893
Black cherry	204	74	314	8	600
Yellow-poplar	200	74	107	16	397
Cucumber	172	64	265	--	501
Hickory	321	129	234	21	705
Gum	94	37	28	2	161
Black locust	174	77	266	29	546
Other hardwoods	396	139	585	147	1,317
All hardwoods	8,851	3,682	5,732	2,142	20,407
All species ^{1/}	10,149	3,911	6,218	2,258	22,536
Percent	45.0	17.4	27.6	10.0	100.0

^{1/} In addition, there is 1,491 M cords of dead chestnut, all in saw-timber trees.

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 19.--Net volume in cords of all trees on commercial forest land
by stand-size class, tree class, and kind of material, 1947

(Standard cords, including bark)

Stand-size class	Saw-timber trees		Pole- timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>	<u>M cords</u>
Saw-timber stands:					
Medium and heavy	6,503	2,327	1,373	810	11,013
Light	3,132	1,331	2,493	789	7,745
Pole-timber stands	496	242	2,167	604	3,509
Other stands	18	11	185	55	269
All stands	10,149	3,911	6,218	2,258	22,536

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 20.--Net board-foot volume on commercial forest land
by species group, diameter class, and county, 1947

(Log scale, International 1/4-inch rule)

SOFTWOODS

Diameter class (Inches)	Pendleton	Pocahontas	Randolph	Total	
	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	Percent
10	27,800	60,600	32,600	121,000	19.6
12	24,600	67,100	35,200	126,900	20.5
14	40,300	83,200	14,200	137,700	22.3
16	57,900	24,200	9,900	92,000	14.9
18	25,700	39,400	3,200	68,300	11.0
20 and over	47,900	13,600	11,200	72,700	11.7
All softwoods	224,200	288,100	106,300	618,600	100.0
HARDWOODS					
12	108,000	210,100	253,200	571,300	14.8
14	148,600	268,200	234,300	651,100	16.8
16	140,700	201,200	237,800	579,700	15.0
18	158,600	198,700	213,600	570,900	14.7
20	132,500	177,500	174,300	484,300	12.5
22	80,300	110,000	52,200	242,500	6.3
24	45,300	34,800	19,500	99,600	2.6
26	59,800	61,000	109,100	229,900	5.9
28	--	68,100	71,600	139,700	3.6
30 and over	139,800	96,400	65,700	301,900	7.8
All hardwoods	1,013,600	1,426,000	1,431,300	3,870,900	100.0
All species	1,237,800	1,714,100	1,537,600	4,489,500	

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 21.--Net cubic-foot volume of all trees on commercial forest land
by species group, diameter class, and county, 1947

(Excluding bark)

SOFTWOODS

Diameter class (Inches)	Pendleton	Pocahontas	Randolph	Total	
	M cu.ft.	M cu.ft.	M cu.ft.	M cu.ft.	Percent
6	4,700	5,400	3,200	13,300	8.0
8	4,700	13,800	6,100	24,600	14.8
10	7,100	15,500	8,400	31,000	18.7
12	4,900	13,800	7,300	26,000	15.7
14	8,100	15,300	2,500	25,900	15.6
16	10,300	4,200	1,700	16,200	9.7
18	4,300	6,500	500	11,300	6.8
20 and over	13,700	2,200	1,800	17,700	10.7
All softwoods	57,800	76,700	31,500	166,000	100.0
HARDWOODS					
6	18,300	33,600	61,100	113,000	8.5
8	22,400	42,000	68,000	132,400	10.0
10	27,000	47,000	67,100	141,100	10.6
12	32,000	55,100	65,100	152,200	11.5
14	40,300	66,700	56,600	163,600	12.3
16	34,600	45,900	53,300	133,800	10.1
18	45,300	43,800	47,500	136,600	10.3
20	30,900	41,100	37,500	109,500	8.3
22	18,400	24,400	15,500	58,300	4.4
24	12,400	9,700	5,900	28,000	2.1
26	17,700	12,800	23,900	54,400	4.1
28	--	16,800	14,300	31,100	2.3
30 and over	28,800	26,000	17,600	72,400	5.5
All hardwoods	328,100	464,900	533,400	1,326,400	100.0
All species	385,900	541,600	564,900	1,492,400	

PENDLETON, POCAHONTAS, AND RANDOLPH COUNTIES,
WEST VIRGINIA

Table 22.--Species composition of each forest type group, expressed in
percent of net cubic-foot volume, 1947

Species	Forest type group				
	Pine-oak	Spruce-hardwood	Northern hardwood	Chestnut oak	Oak-hickory
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
Softwoods:					
Spruce	--	68.4	2.4	--	--
Hemlock	2.8	.8	2.5	--	1.1
White pine	12.2	1.7	.3	2.2	3.3
Other softwoods	27.9	--	.1	1.2	.7
All softwoods	42.9	70.9	5.3	3.4	5.1
Hardwoods:					
Sugar maple	0.1	--	12.9	1.9	7.5
Red maple	1.0	1.0	10.2	2.0	4.7
Red oak	16.1	--	5.2	7.6	36.0
White oak	4.2	--	.6	1.3	7.8
Chestnut oak	23.5	--	1.6	70.5	16.7
Yellow birch	2.2	19.9	13.8	2.1	2.7
Beech	.3	4.2	20.5	--	.4
Basswood	--	--	6.4	2.4	1.8
Black cherry	1.8	1.1	4.1	.3	1.4
Yellow-poplar	--	--	2.6	--	1.6
Cucumber	.4	.6	3.1	2.3	1.2
Hickory	3.1	--	1.3	2.7	6.5
Gum	1.8	--	.1	2.0	1.2
Black locust	2.1	.6	3.3	1.0	1.8
Other hardwoods	.5	1.7	9.0	.5	3.6
All hardwoods	57.1	29.1	94.7	96.6	94.9
All species	100.0	100.0	100.0	100.0	100.0

FOREST SURVEY PROCEDURE

These estimates of forest area and timber volume are based upon data obtained from a sampling of the three counties. The following procedure was used:

Photo interpretation.--A large number of plots (about one to every 370 acres) were distributed regularly over the aerial photographs covering these counties. Photo interpreters first determined whether each plot was forest or nonforest. If forest, the stand in which the plot was located was examined through the stereoscope and classified as to forest type and stand-size class (based on stand volume and density).

Ground plot examination.--The next step was to examine on the ground enough 1/5-acre forest plots randomly selected from those previously examined on aerial photos in order to establish a reliable average volume per acre from a tally of trees by species and diameters at breast height. Estimates of cull, site quality, past use, and other items also were recorded from the ground plots. An average of about one ground plot was selected to every 5,850 acres of forest land.

Compilation of data.--Photo-interpretation and field-plot data were entered on punch cards in the Upper Darby office. Tabulations were made from these data, resulting in the set of tables herewith.

ACCURACY OF DATA

The number of observations taken on the aerial photographs and the number of ground plots examined in each stand-size class were designed to yield forest area and volume estimates of the highest practicable degree of sampling accuracy for the personnel and equipment available. Some errors in the forest inventory are inescapable because: (1) area classifications may be imperfect, and volume of sample trees is derived from measurements of diameter, height, and form, with adjustments for estimated defect; and (2) the estimated total is obtained by "blowing up" a sample.

Errors of the first class include: mistakes in measurement and judgment, imperfect volume tables, and possible faulty adjustment for defects. Every effort was made to keep such errors to a minimum and compensating, but the degree to which this may have been attained cannot be measured satisfactorily. Errors of the second class are due to failure of the sample to perfectly represent the whole. Such errors are measurable. The sampling errors for principal items for these counties as a whole are expressed below as percentages of their respective totals:

	<u>Percent</u>
Forest area	+ 1.4
Saw-timber area	+ 4.0
Pole-timber area	+ 8.6
Total board-foot volume	+ 5.6
Board-foot volume in saw-timber stands	+ 6.2
Total cubic-foot volume	+ 3.6
Cubic-foot volume in pole-timber stands	+ 10.2

If we assume no bias and no systematic errors, it is reasonable to expect that actual areas and volumes will be within the indicated range of reported areas and volumes about two times in three, and within the range of two sampling errors about 19 times in 20. For example, the chances are about two out of three that the forest area would not differ more than 1.4 percent from that reported herein. The chances are about 19 in 20 that the forest area would not differ more than 2.8 percent or twice that for one sampling error. Corresponding statements may be made for each of the other items for which sampling errors are given.

Statistics of forest area by type, stand-size class, etc., reported in the tables herewith are subject to increasing sampling error as the class becomes finer and its numerical magnitude smaller. In general, experience to date indicates the ranges in area sampling error shown below:

<u>Class area in acres</u>	<u>Approximate area sampling error in percent</u>
Less than 50,000:	Variable, usually over 40
50,000 to 100,000:	Ordinarily between 20 and 40
100,000 to 300,000:	Usually between 10 and 20
More than 300,000:	Commonly less than 10, but may be as high as 20

Volume sampling errors are larger (in percentage) than area errors and have a tendency to vary by stand-size class. Sampling errors of board-foot data are usually larger than corresponding errors in cubic-feet. The percentage additions that should generally be made to area sampling errors in order to estimate volume sampling errors are shown below:

Stand-size class	Volume sampling errors in relation to area sampling errors	
	For board feet	For cubic feet
	<u>Percent</u>	<u>Percent</u>
Saw timber:		
Medium and heavy	Add 1	Add 1
Light	Add 2	Add 1
Pole timber	Add 6 to 10	Add 2 to 3

Board-foot and cubic-foot volumes per acre are extremely variable for seedling and sapling and poorly stocked stands. The volume sampling errors for these stand-size classes are erratic and may be from 25 to 100 percent higher than the area sampling errors.

EXPLANATION OF TERMS USED

AREA

Land area.--Includes dry land and land temporarily or partially covered by water, such as marsh land, swamps, and river flood plains, streams, sloughs, estuaries, and canals less than one-eighth of a statute mile in width; and lakes, reservoirs, and ponds having less than 40 acres of area. (See "Areas of the United States, 1940," page 2, U. S. Bureau of the Census.) Does not include water areas larger than those defined above nor deeply indented embayments and sounds and other coastal water behind or sheltered by headlands or islands separated by less than 1 nautical mile of water; and islands having less than 40 acres of area.

Forest area.--Land bearing forest growth or land from which the forest has been removed but which shows evidence of past forest occupancy and which is not now in other use. Except for right of ways of active power lines, highways, roads, and railroads that are not abandoned, strips of nonforest land less than 100 feet wide and areas less than 1 acre surrounded by forest were classified as forest.

Commercial forest area.--Forest land bearing or capable of bearing pole-timber or saw-timber stands of commercial character and economically available now or prospectively for commercial use and not formally withdrawn from such use.

Noncommercial forest area.--Two classes of forest land are included: (1) reserved productive--forest land bearing or capable of bearing pole-timber or saw-timber stands of commercial character but formally withdrawn

from commercial use for parks, preserves, wilderness areas, and so forth; and (2) nonproductive--other forest land permanently incapable of producing commercial pole-timber or saw-timber stands. The latter areas are either rocky, mountainous, or do not possess the climate and soil qualities essential for the production of commercial timber crops.

Nonforest area.--All land areas other than forest, including the acreage in cultivation and pasture less than 30 percent covered by tree canopy; land enclosed within the right of ways of active power lines, highways, roads, and railroads; abandoned roads when the soil has been removed or the pavement remains; marshes, bare rock, quarries, coal strip-pings, and gravel pits; water areas such as lakes, reservoirs, and ponds having less than 40 acres of area, and streams, sloughs, estuaries, and canals less than one-eighth mile in width (larger water areas are classified as "inland water" by the Bureau of the Census and not included within land area figures); and urban and other residential and industrial areas. Narrow belts of trees such as fence rows and stream margins less than 100 feet in width and small groups of trees less than one acre in area that are surrounded by nonforest land are considered nonforest.

FOREST TYPE GROUPS

(Board-foot volume of each species in saw-timber stands and number of stems in other stand-size classes was the basis for forest type classification. Table 3 shows the area of the detailed forest types that are combined in each forest type group. Table 22 gives the species composition of each forest type group, expressed in percent of net cubic-foot volume.)

Pine-oak.--The principal type included is the hard pine-oak, in which pitch, shortleaf, and Virginia pines comprise 20 to 74 percent of the stands in mixture with various oaks. Relatively small areas of white pine-hardwood, white pine, and hemlock types are also included. Although the hemlock type is usually found associated with the northern hardwood, it is included here in order to segregate types dominated by softwoods from those dominated by hardwoods.

Spruce-hardwoods.--Types included are the spruce (spruce making up 75 percent or more of the stand) and spruce-hardwood (spruce making up 50 to 74 percent of the stand in mixture with hardwoods).

Northern hardwood.--Hardwoods are predominant in the stands included in the type group. The northern hardwood type, made up largely of sugar maple, yellow birch, and beech, is the principal one in this type group. Next in importance is the hardwood-spruce type, in which spruce comprises 20 to 49 percent of the stand in association with hardwoods. Smaller areas of the aspen type also are included.

Chestnut oak.--This type occurs generally in nearly pure stands and has therefore been kept by itself.

Oak-hickory.--Includes stands dominated principally by oak (other than chestnut oak) in association with hickory and sugar maple. A small area of hardwood-white pine (white pine comprising 20 to 49 percent of the stand in mixture with red oak and white ash), in which the hardwood is largely oak, has been included.

STAND-SIZE CLASSES

(The minimum area classified according to stand-size was 1 acre.)

Medium and heavy saw-timber stands.--Stands that had a net volume of 5,000 board feet or more per acre.

Light saw-timber stands.--Stands that had a net volume of 1,500 to 4,999 board feet per acre.

Pole-timber stands.--Stands that had a net volume of less than 1,500 board feet per acre and at least 10 percent of the area covered by the crown canopy of pole-timber or larger trees. At least one-half the minimum stocking was in pole-timber trees. These stands generally contained at least 200 cubic feet in trees 5.0 inches and larger.

Seedling and sapling.--Stands that did not qualify either as saw-timber or pole-timber but well stocked with seedlings and saplings (at least 40 percent of the stand area covered by crown canopy). These stands generally contained at least 300 seedlings and saplings 1.0 to 4.9 inches per acre.

Poorly stocked stands.--Stands that did not qualify as saw timber or pole timber but were at least 10 percent stocked with saw-timber or pole-timber trees or with 10 to 39 percent of the crown canopy in seedlings and saplings.

Unstocked areas.--Stands that did not qualify as saw timber, pole timber, or seedling and sapling, and were less than 10 percent stocked.

SITE CLASS

Site class.--Based on the average number of logs produced by mature trees in commercial forest areas. Where mature, dominant, or co-dominant trees were present, the following merchantable height classes, based on 16-foot logs, were used:

<u>Site</u>	<u>Hardwoods</u>	<u>Softwoods</u>
Good	3 or more logs	5 or more logs
Fair	1½ to 3 logs	3 to 5 logs
Poor	8 feet to 1½ logs	8 feet to 3 logs
Nonproductive	(See definition under AREA.)	

noncommercial by standard definition

Where no mature trees of the dominant or codominant crown classes were present, site was estimated from the species and growth of immature trees, the depth and type of soil, aspect, soil moisture, and the shrubby and herbaceous ground cover. Poor sites that are incapable of producing pole-timber or saw-timber stands were classed as nonproductive (non-commercial forest area).

VOLUME ESTIMATES

(Volume in trees on areas classified as nonforest is not included; all volumes are net, that is, with defect deducted.)

Board-foot volume.--Includes the sawlog material in saw-timber trees estimated through use of the International 1/4-inch log rule which closely approximates green lumber tally for square-edged boards. Top diameters vary with the limits of usable sawlog material. Deductions have been made for rot, crook, and other defects.

Cubic-foot volume.--Includes the sound wood, excluding bark, in: (1) the sawlog portion of saw-timber trees, (2) the upper stems of softwood saw-timber trees and the upper stems and limbs of hardwood saw-timber trees to a minimum of 4 inches inside bark, (3) the full stems of pole-timber trees to a minimum of 4 inches inside bark, and (4) the sound wood volume of cull trees. No deductions were made for defects unless they affected the wood structure.

Volume in cords.--This volume was derived from the net cubic-foot volume (excluding bark) by applying a factor of 78 cubic feet per cord for softwoods and 65 cubic feet per cord for hardwoods. Although the number of cubic feet per cord varies with size of material, these converting factors were used for all material in this report. The resulting figures approximate the volume of a standard stacked cord (4 feet by 4 feet by 8 feet), including bark. No deductions were made for defect unless they affected the wood structure.

TREE CLASSES

Saw-timber tree.--A softwood tree at least 9.0 inches d.b.h. (diameter outside bark at $4\frac{1}{2}$ feet above the ground on the upper side of the tree) or a hardwood tree at least 11.0 inches d.b.h. with a sound log at least 8 feet long and with at least half of the gross volume of the tree in merchantable material.

Pole-timber tree.--A tree that ranged from 5.0 inches d.b.h. up to a minimum saw-timber tree size and that gave promise of becoming a merchantable saw-timber tree.

Cull tree.--A tree that did not qualify as a saw-timber or pole-timber tree because of poor form, limbiness, rot, or other defect.

Tree-diameter class.--Each 2-inch diameter class includes trees measured in the range from 1.0 inch below the midpoint of the class up to but not including 1.0 inch above the midpoint. For example, the 6-inch class includes trees whose d.b.h. fall in the range of 5.0 inches up to but not including 7.0 inches.

SPECIES

The various tree species found in this area are listed below. Approved common names 1/ are shown in parentheses if these differ from the brief name used in the tables. Approved scientific names 1/ are underlined. If two or more species are included under a single name in the tables, the various species are listed or the word "species" appears after the approved scientific name for the genus.

Softwoods

Spruce (Red spruce)	- <u>Picea rubens</u>
(Black spruce)	- <u>Picea mariana</u>
Hemlock (Eastern hemlock)	- <u>Tsuga canadensis</u>
White pine (Eastern white pine)	- <u>Pinus strobus</u>
Other softwoods (Pitch pine)	- <u>Pinus rigida</u>
(Shortleaf pine)	- <u>Pinus echinata</u>
(Virginia pine)	- <u>Pinus virginiana</u>

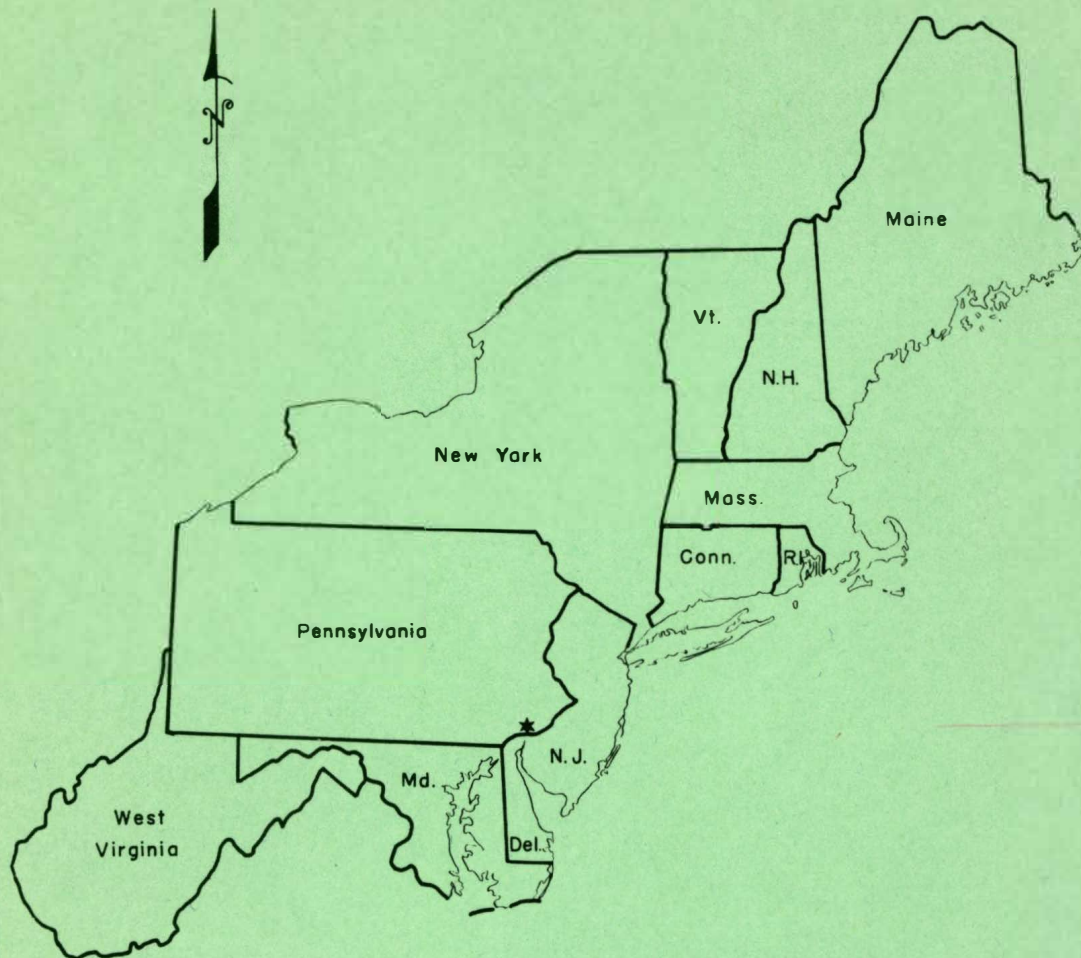
Hardwoods

Sugar maple	- <u>Acer saccharophorum</u>
Red maple	- <u>Acer rubrum</u>
Red oak (Northern red oak)	- <u>Quercus borealis</u>
White oak	- <u>Quercus alba</u>
Chestnut oak	- <u>Quercus montana</u>
Yellow birch	- <u>Betula lutea</u>
Beech (American beech)	- <u>Fagus grandifolia</u>
Basswood (American basswood)	- <u>Tilia americana</u>
Black cherry	- <u>Prunus serotina</u>
Yellow-poplar	- <u>Liriodendron tulipifera</u>
Cucumber (Cucumbertree)	- <u>Magnolia acuminata</u>
Hickory	- <u>Carya species</u>
Gum (Sweetgum)	- <u>Liquidambar styraciflua</u>
(Blackgum)	- <u>Nyssa sylvatica</u>
Black locust	- <u>Robinia pseudoacacia</u>
Other hardwoods (Ash)	- <u>Fraxinus species</u>
(Bigtooth aspen)	- <u>Populus grandidentata</u>
(Quaking aspen)	- <u>Populus tremuloides</u>
(Buckeye)	- <u>Aesculus species</u>
(Butternut)	- <u>Juglans cinerea</u>

1/ U. S. Forest Service. Check list of the native and naturalized trees of the United States including Alaska. U. S. Dept. Agr. 325 pp. 1944.

Hardwoods (continued)

- | | |
|-----------------------|--------------------------------|
| Other hardwoods (Elm) | - <u>Ulmus</u> species |
| (Pin cherry) | - <u>Prunus pennsylvanica</u> |
| (Honeylocust) | - <u>Gleditsia triacanthos</u> |
| (Eastern | |
| hophornbeam) | - <u>Ostrya virginiana</u> |
| (Sassafras) | - <u>Sassafras albidum</u> |
| (Downy service- | |
| berry) | - <u>Amelanchier arborea</u> |
| (Sourwood) | - <u>Oxydendron arboreum</u> |



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